

FIG. 1A

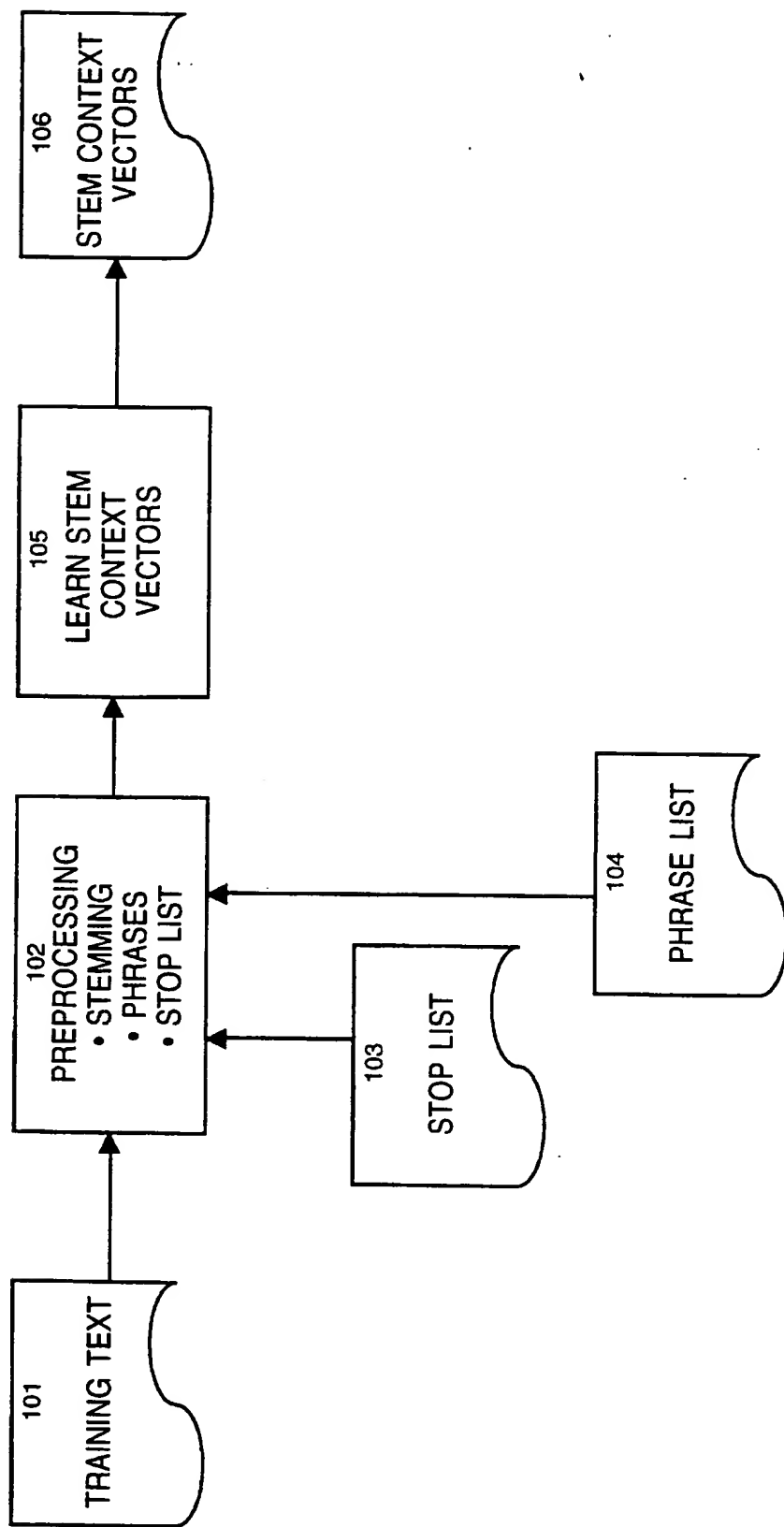


FIG. 1B



FIGURE 2A

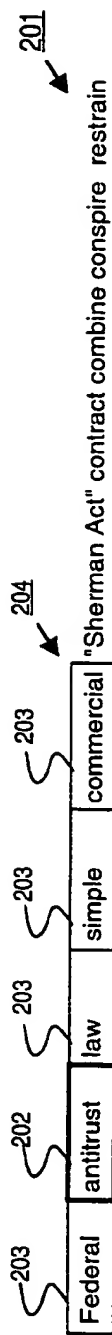


FIGURE 2B

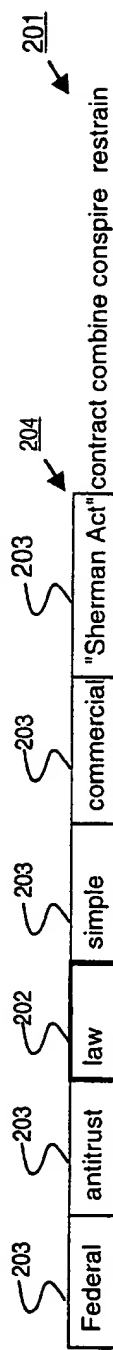


FIGURE 2C

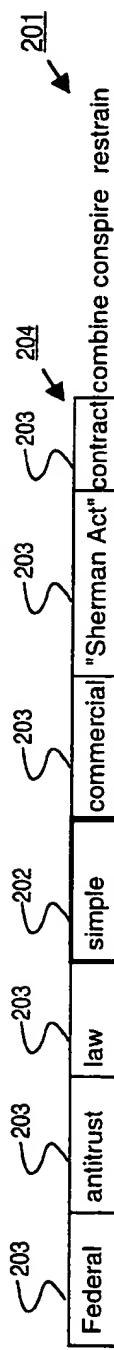


FIGURE 2D

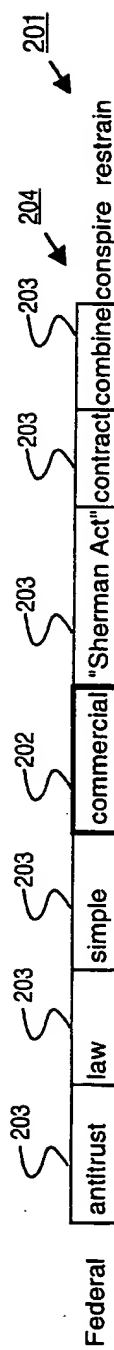


FIGURE 2E

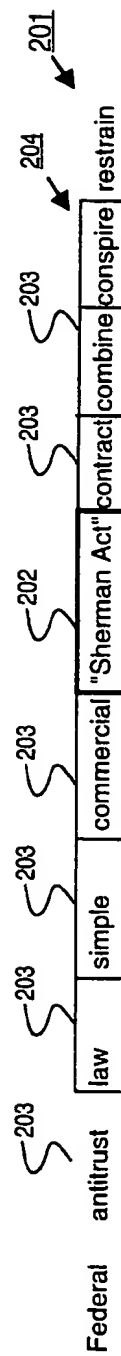
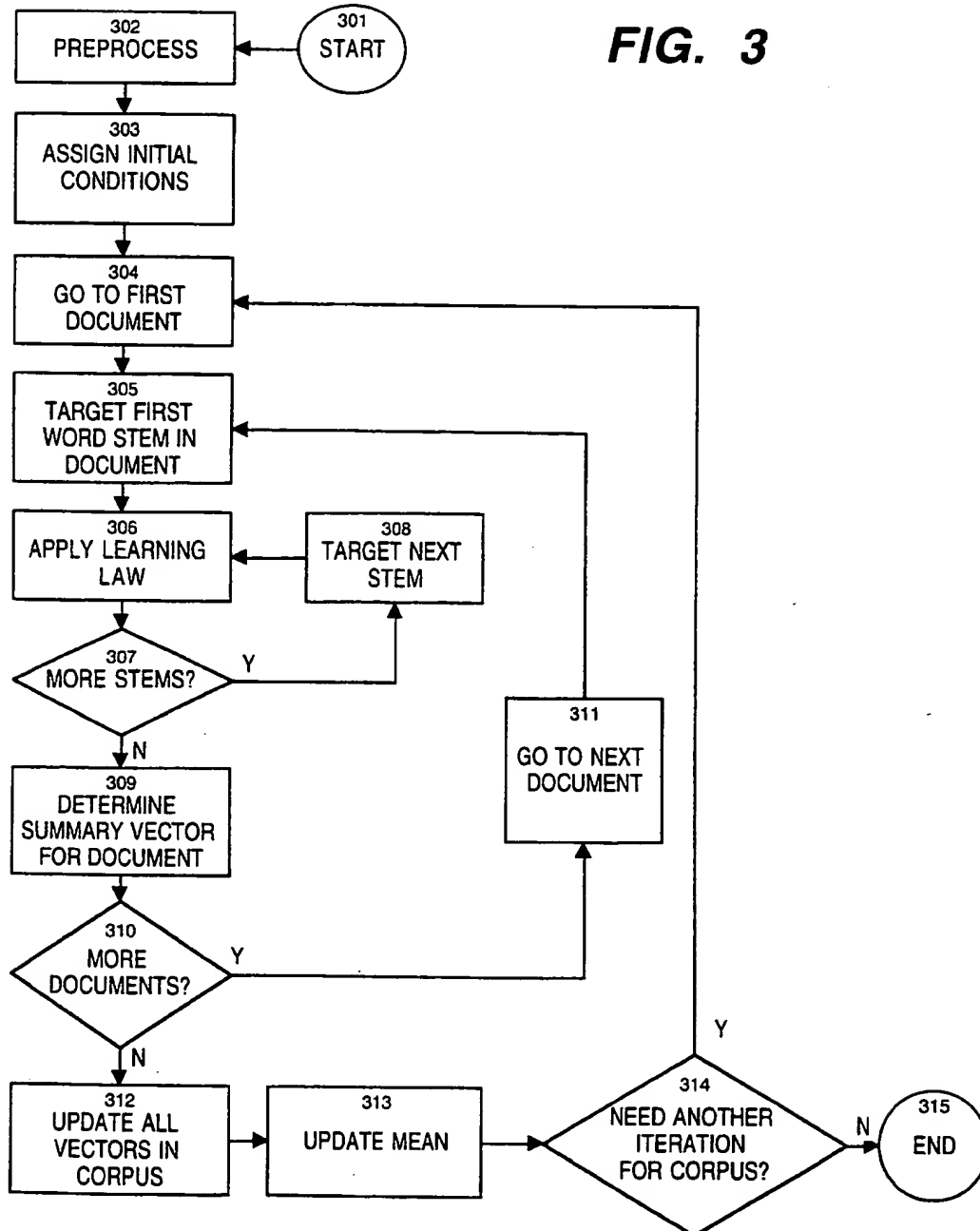


FIGURE 2F

FIG. 3



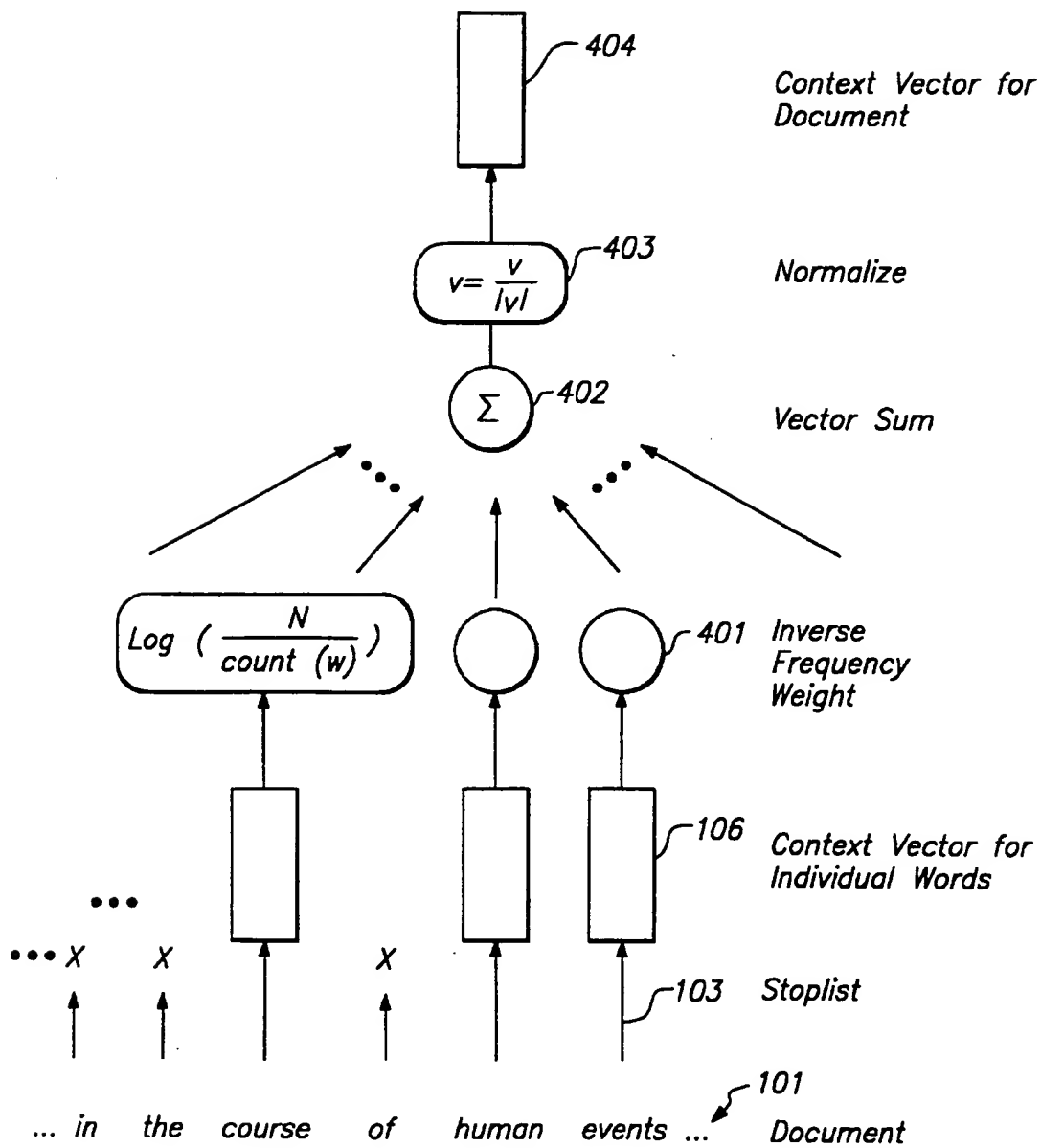
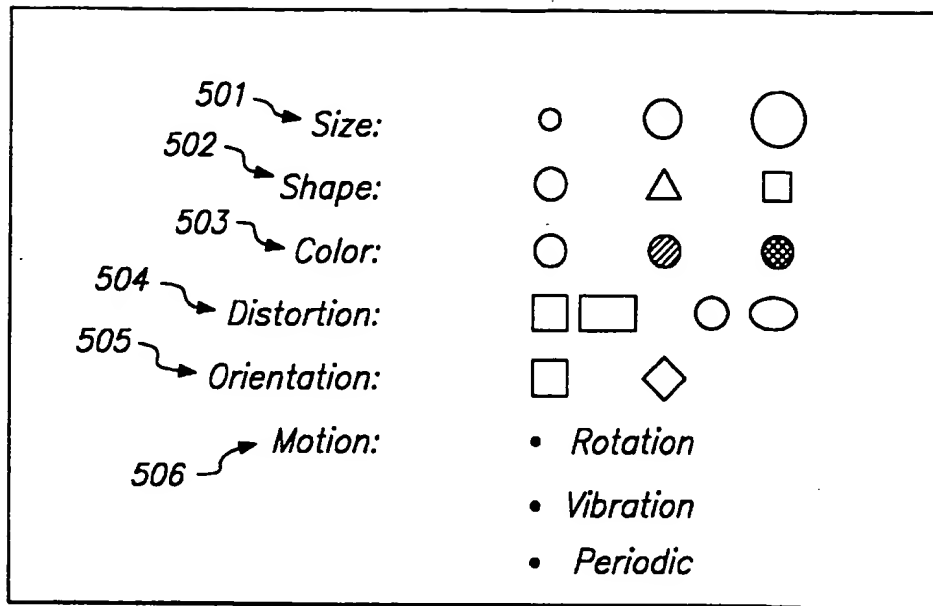


FIG. 4



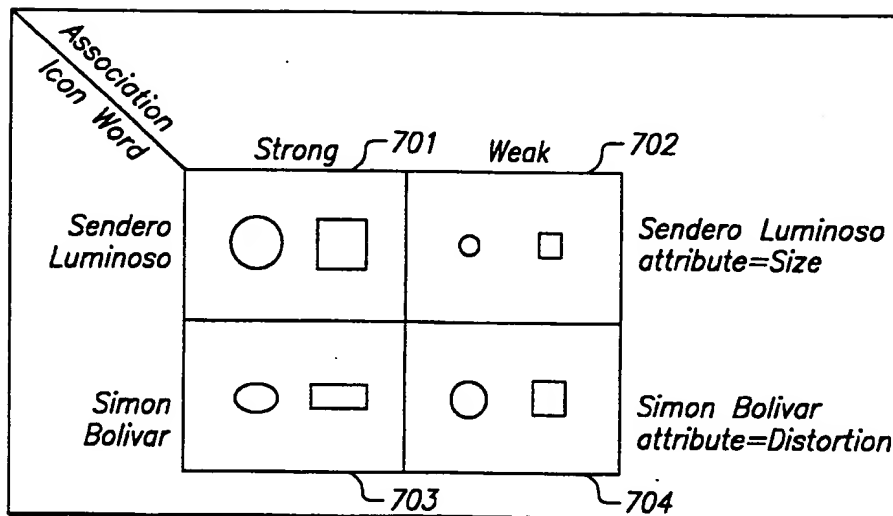


FIG. 7

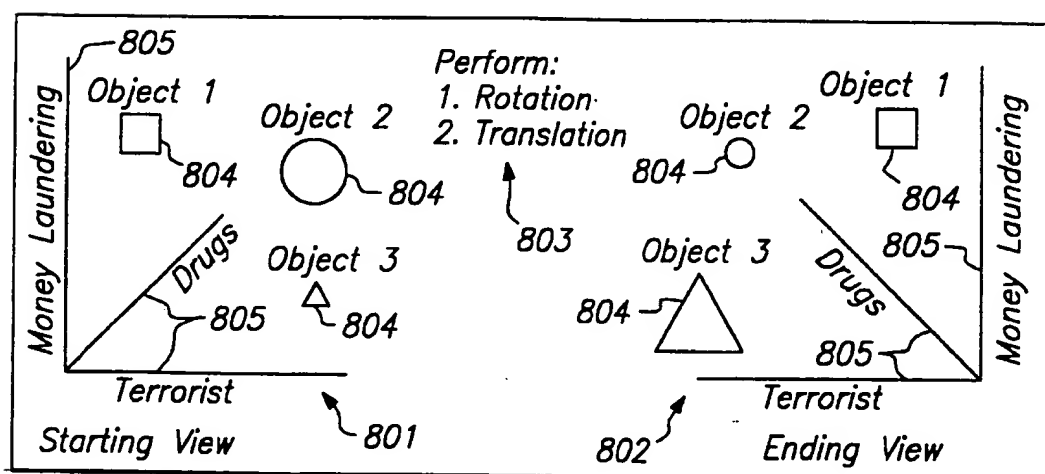


FIG. 8

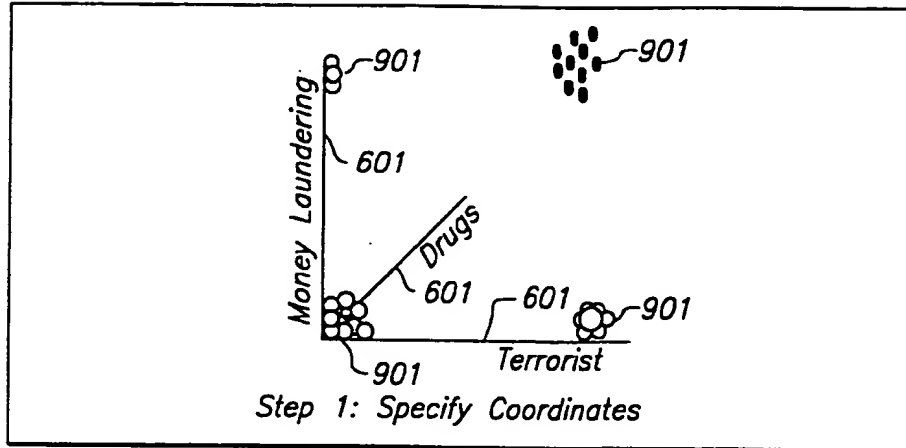


FIG. 9A

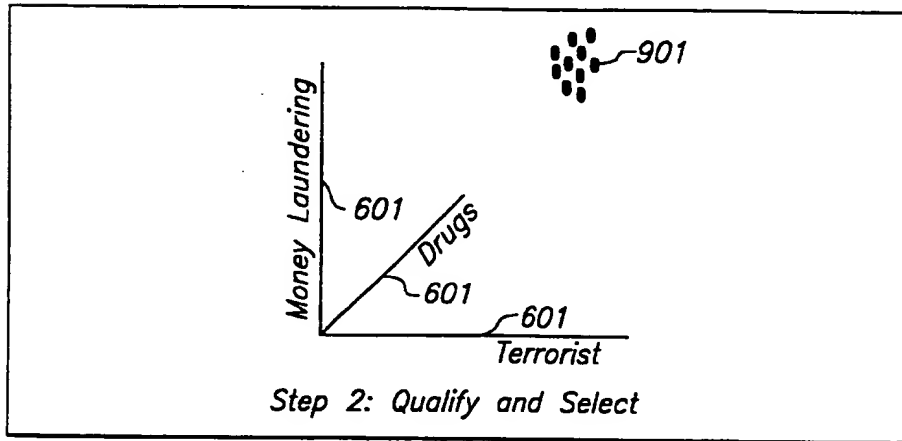


FIG. 9B

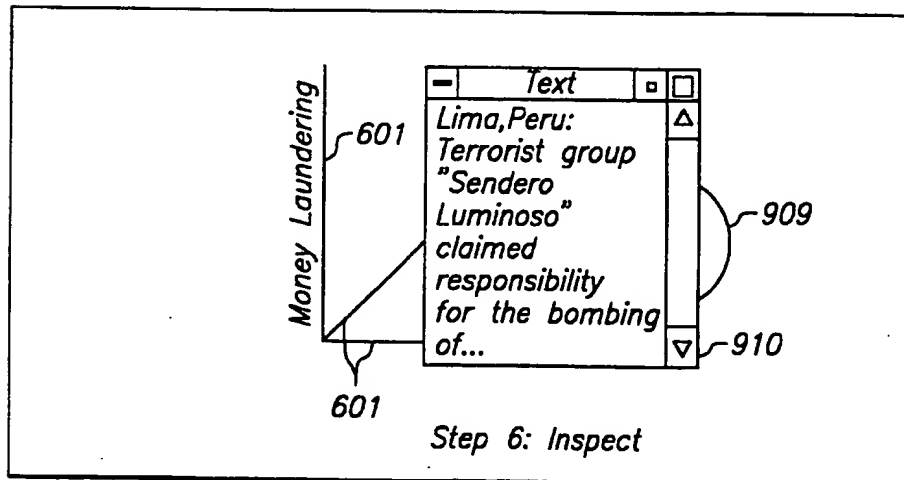


FIG. 9C

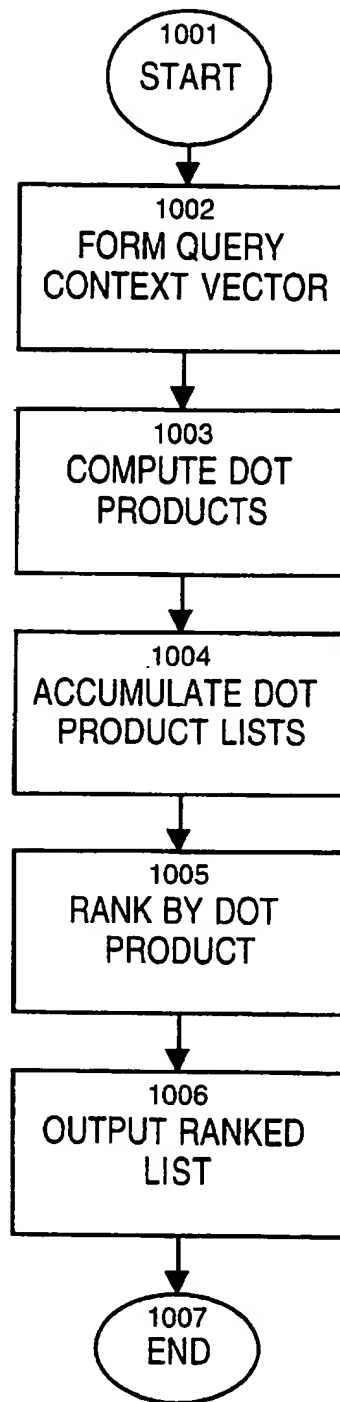


FIG. 10

```

1102
ACCEPT QUERY FROM
USER

```

1103
SEPARATE QUERY INTO
COMPONENTS

1104
ASSIGN DISPLAY
COORDINATE OR
ATTRIBUTE FOR EACH
COMPONENT

```

1105 GET CONTEXT VECTOR
      FOR EACH COMPONENT

```

1106

FOR EACH DOCUMENT
DETERMINE DOT
PRODUCT OF DOCUMENT
SUMMARY VECTOR WITH
EACH COMPONENT
CONTEXT VECTOR

1107
SUPPLY RESULTS TO
DISPLAY ENGINE

1108
END

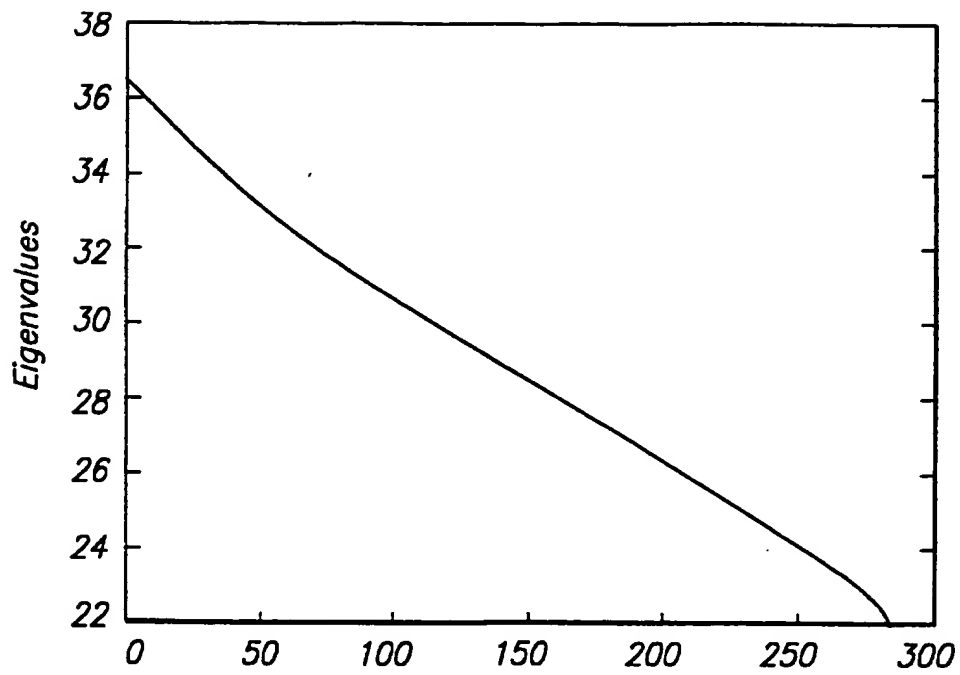


FIG. 12

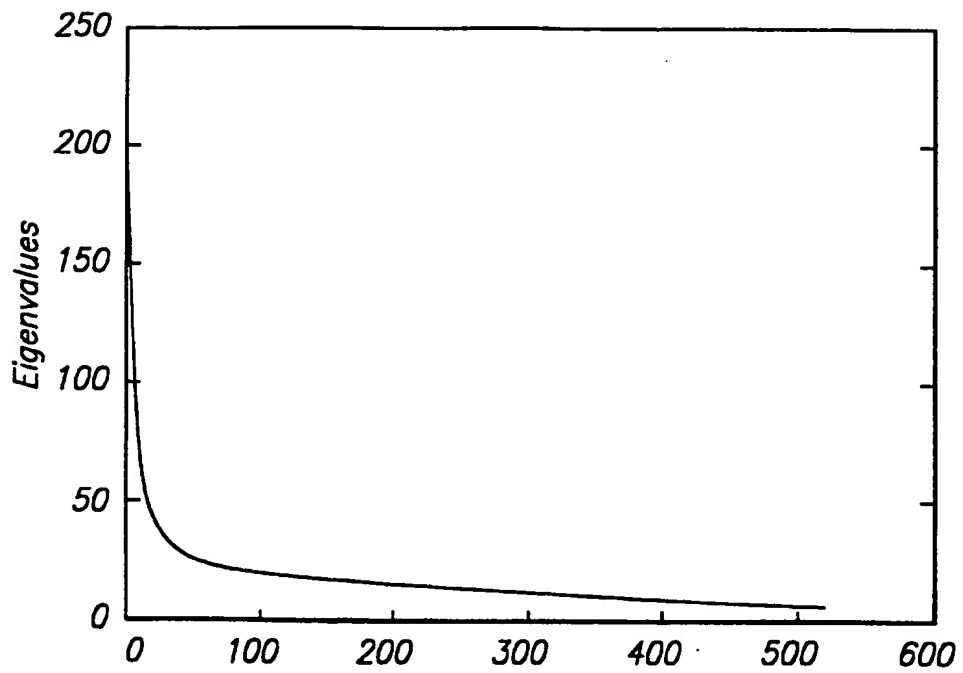


FIG. 13

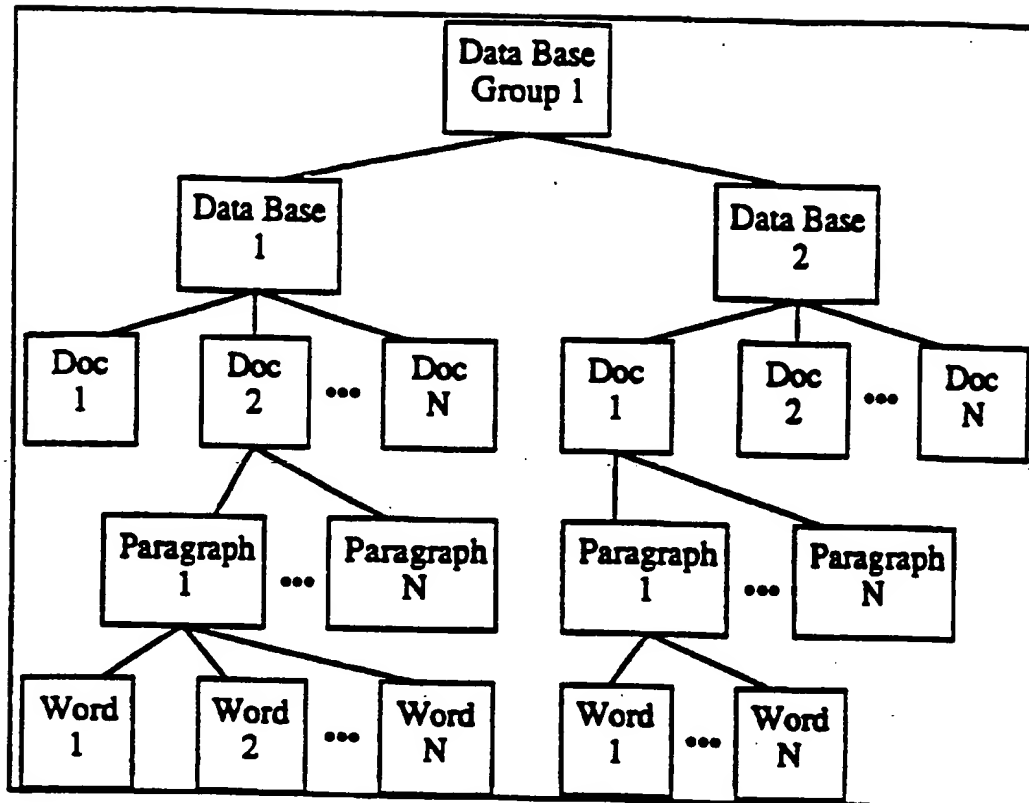


FIGURE 14

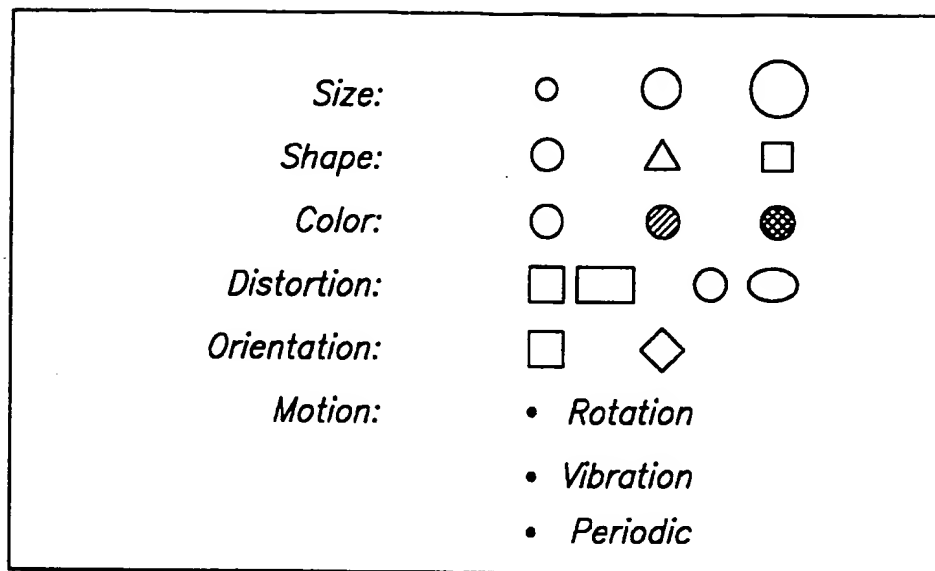


FIG. 15

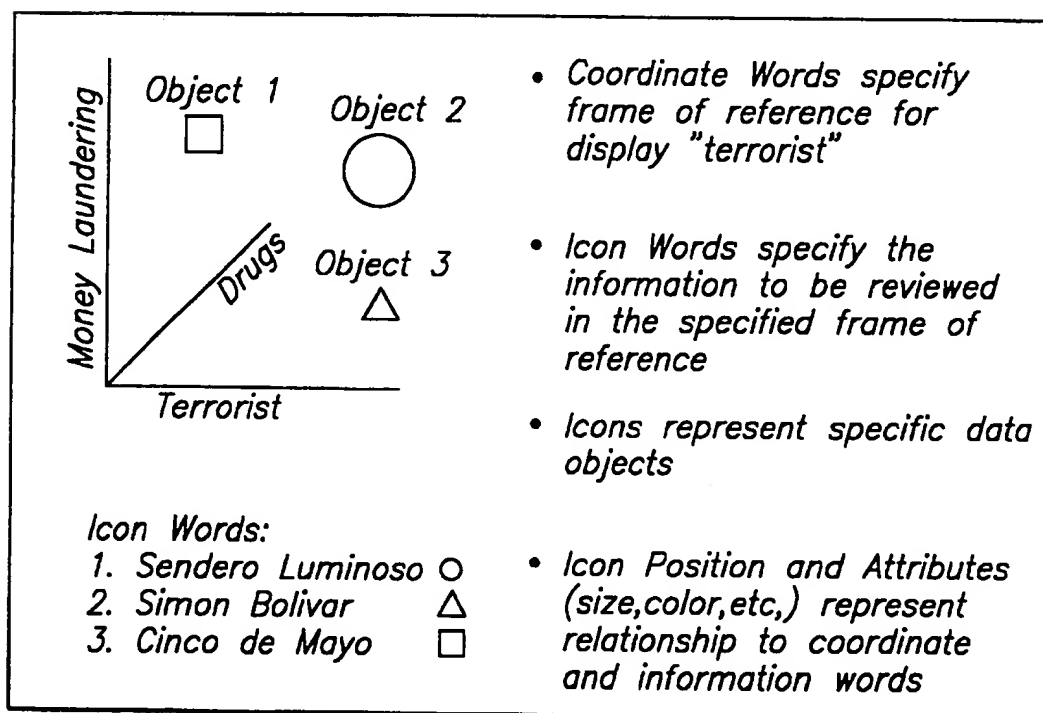


FIG. 16









| Association Icon Word | | | | |
|--------------------------|--|---|---|---------------------------------------|
| | | Strong | Weak | |
| Sendero Luminoso | |   |   | Sendero Luminoso attribute=Size |
| Simon Bolivar | |   |   | |
| | | | | Simon Bolivar attribute=Distortion |

FIG. 17

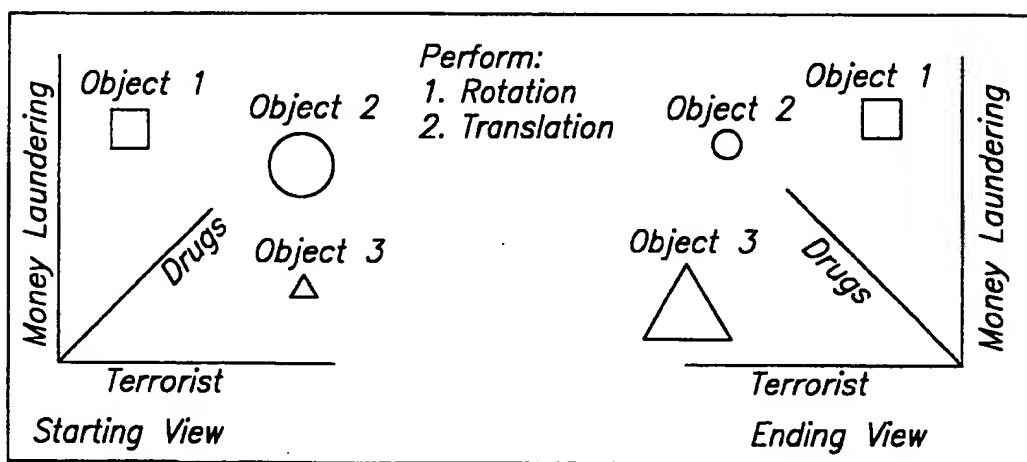
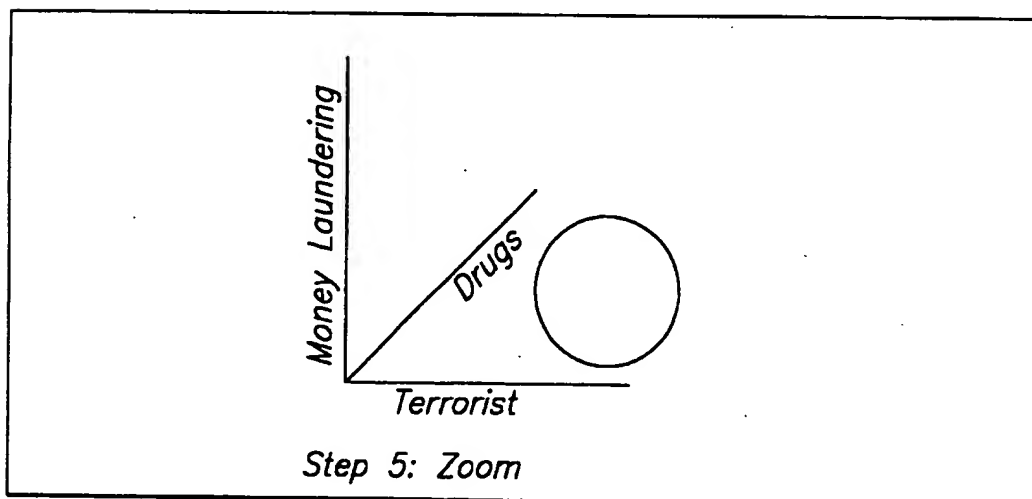
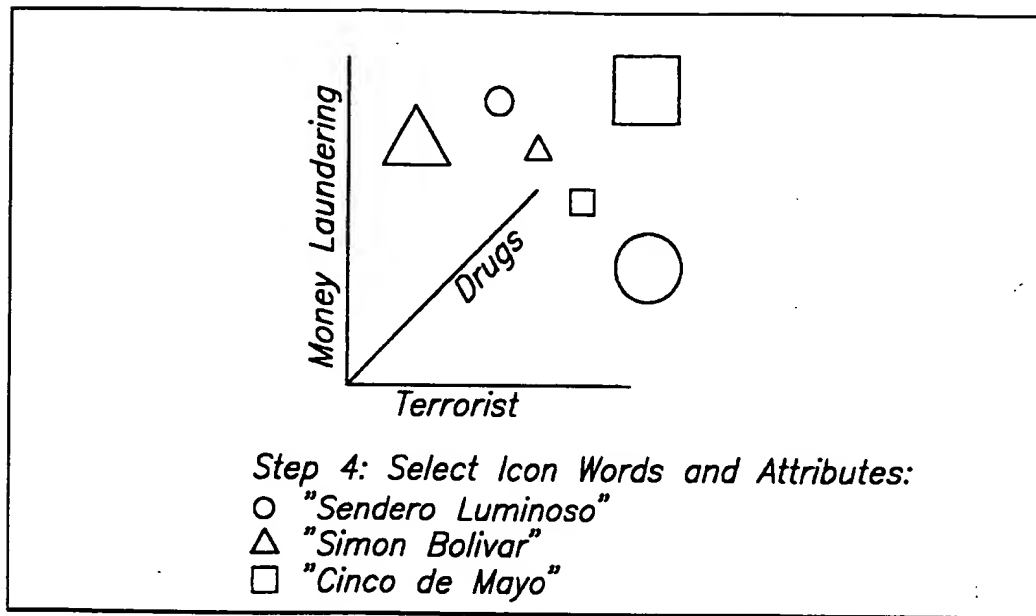


FIG. 18



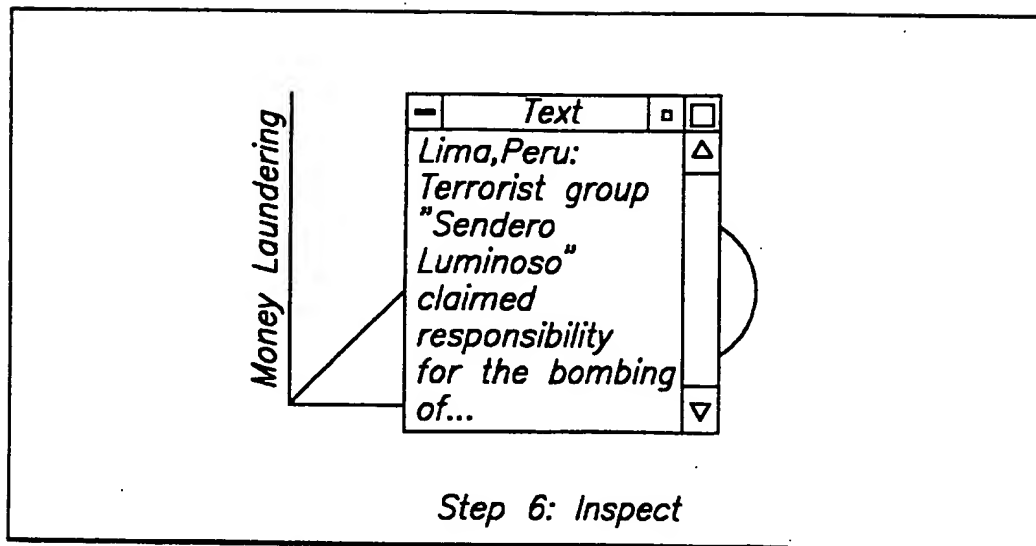


FIG. 24

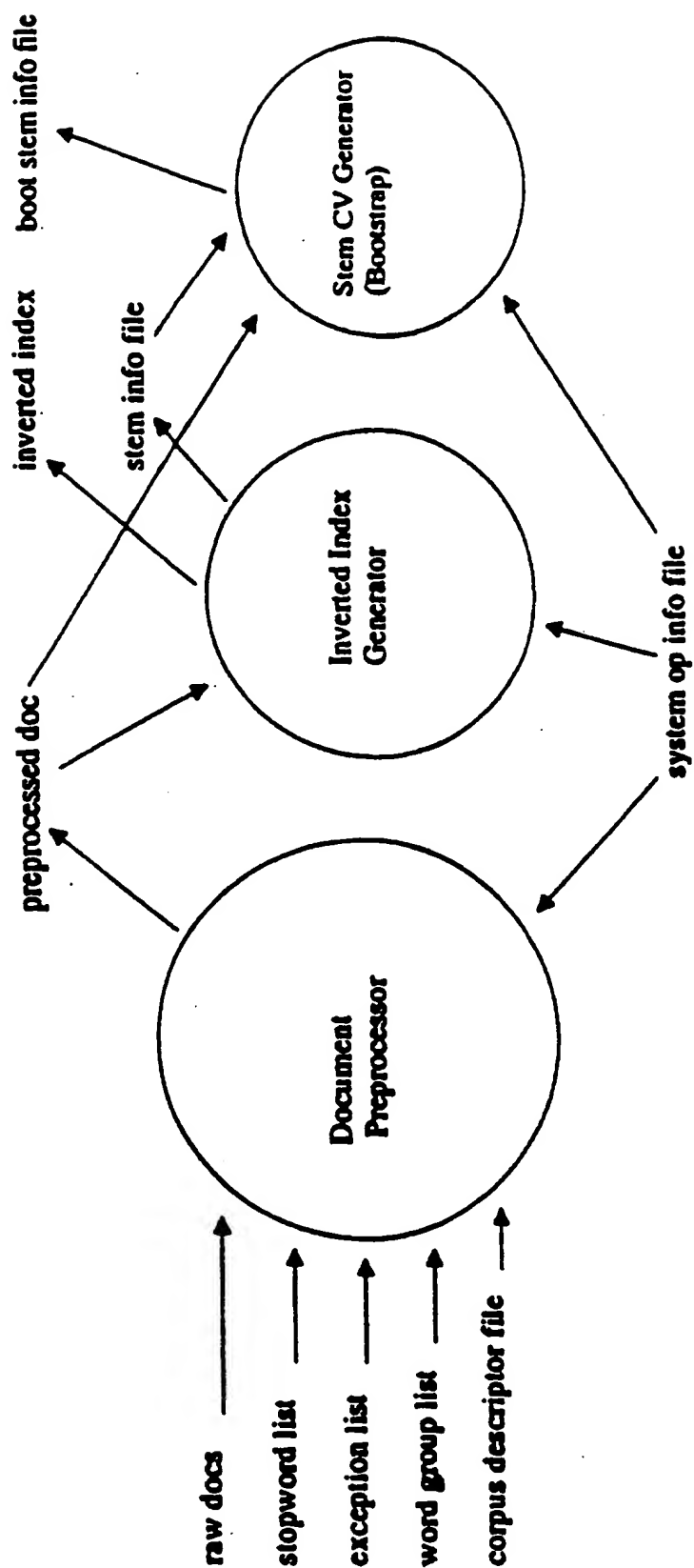


FIGURE 25

[illegible]

**Note: uses boot stem
info file if word senses
not generated**

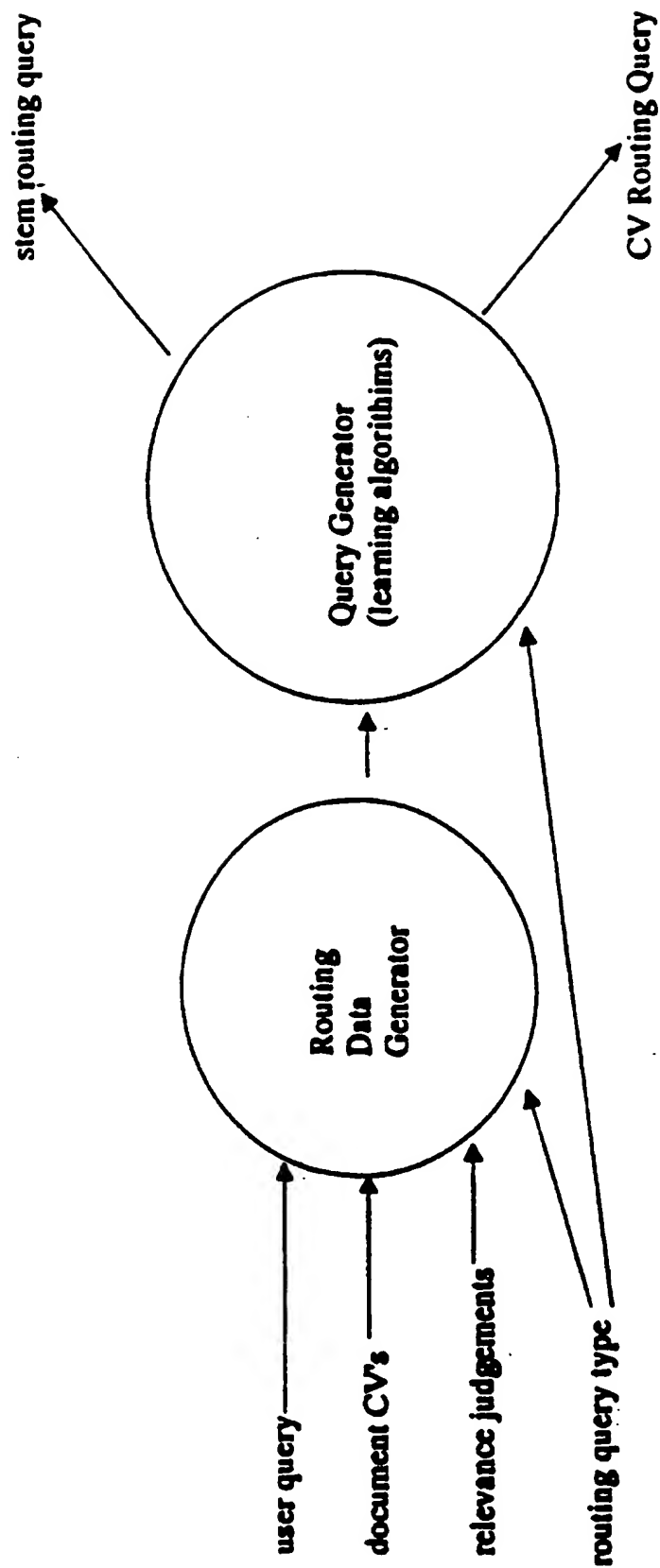


FIGURE 27

Routing Query Generation

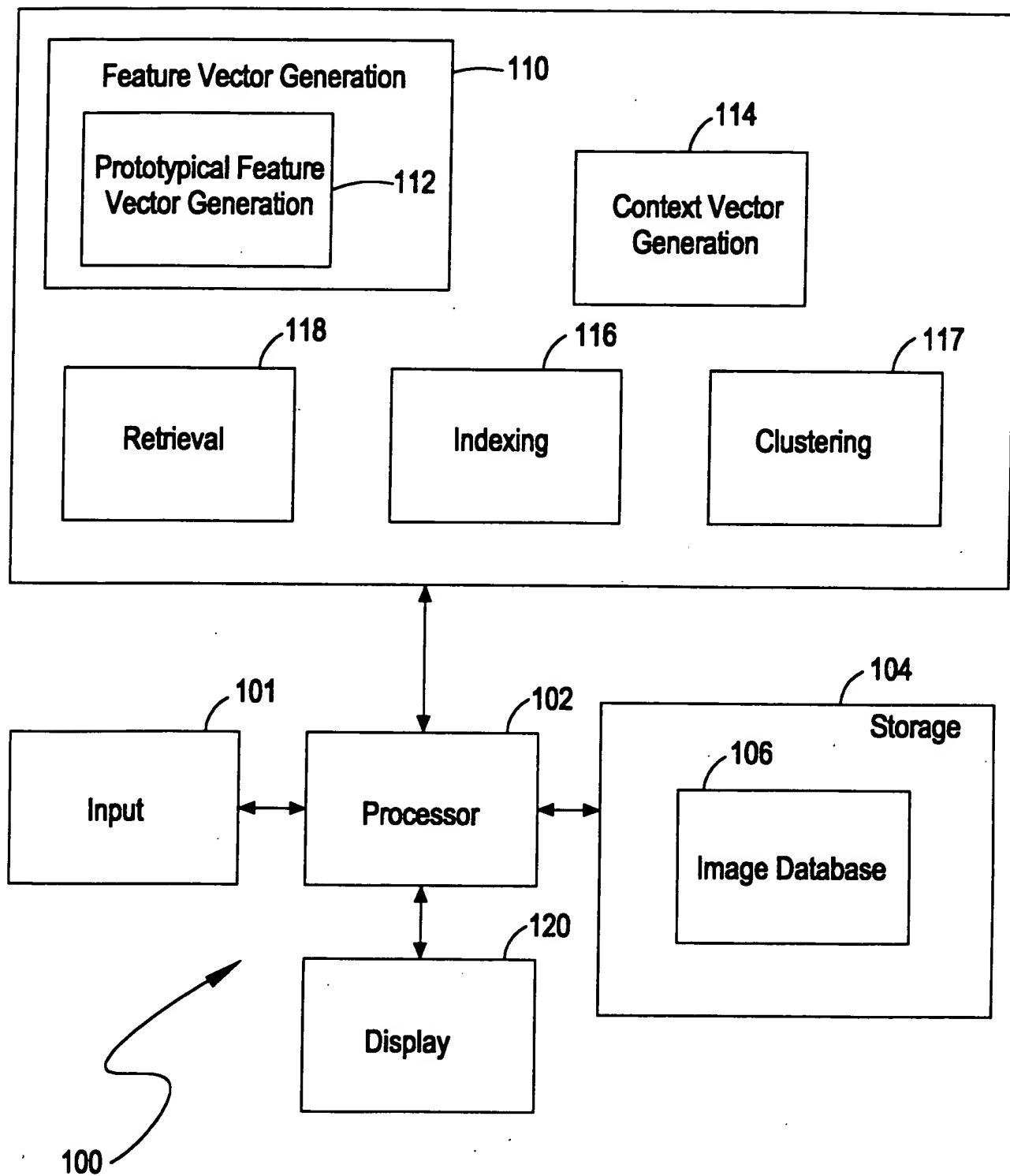


FIG. 29

```
graph TD; 106[Image Database] --> 201((Images)); 201 --> 203[System Initialization]; 203 --> 205((Atomic Vocabulary)); 203 --> 207((Stop List)); 205 --> 209[Atomic Bootstrapping]; 207 --> 209; 209 --> 211((Atom Context Vectors)); 211 --> 213[Generate Summary Context Vectors for each Image]; 201 --> 213; 213 --> 215((Characterized Images));
```

The flowchart illustrates the system architecture for image characterization. It begins with an **Image Database** (106) feeding into an **Images** node (201). From **Images** (201), the process branches into **System Initialization** (203) and **Atomic Bootstrapping** (209). **System Initialization** (203) leads to **Atomic Vocabulary** (205) and **Stop List** (207), which both feed into **Atomic Bootstrapping** (209). **Atomic Bootstrapping** (209) produces **Atom Context Vectors** (211), which then feed into **Generate Summary Context Vectors for each Image** (213). The **Images** (201) node also feeds directly into **Generate Summary Context Vectors for each Image** (213). Finally, **Generate Summary Context Vectors for each Image** (213) produces the **Characterized Images** (215).

FIG. 30

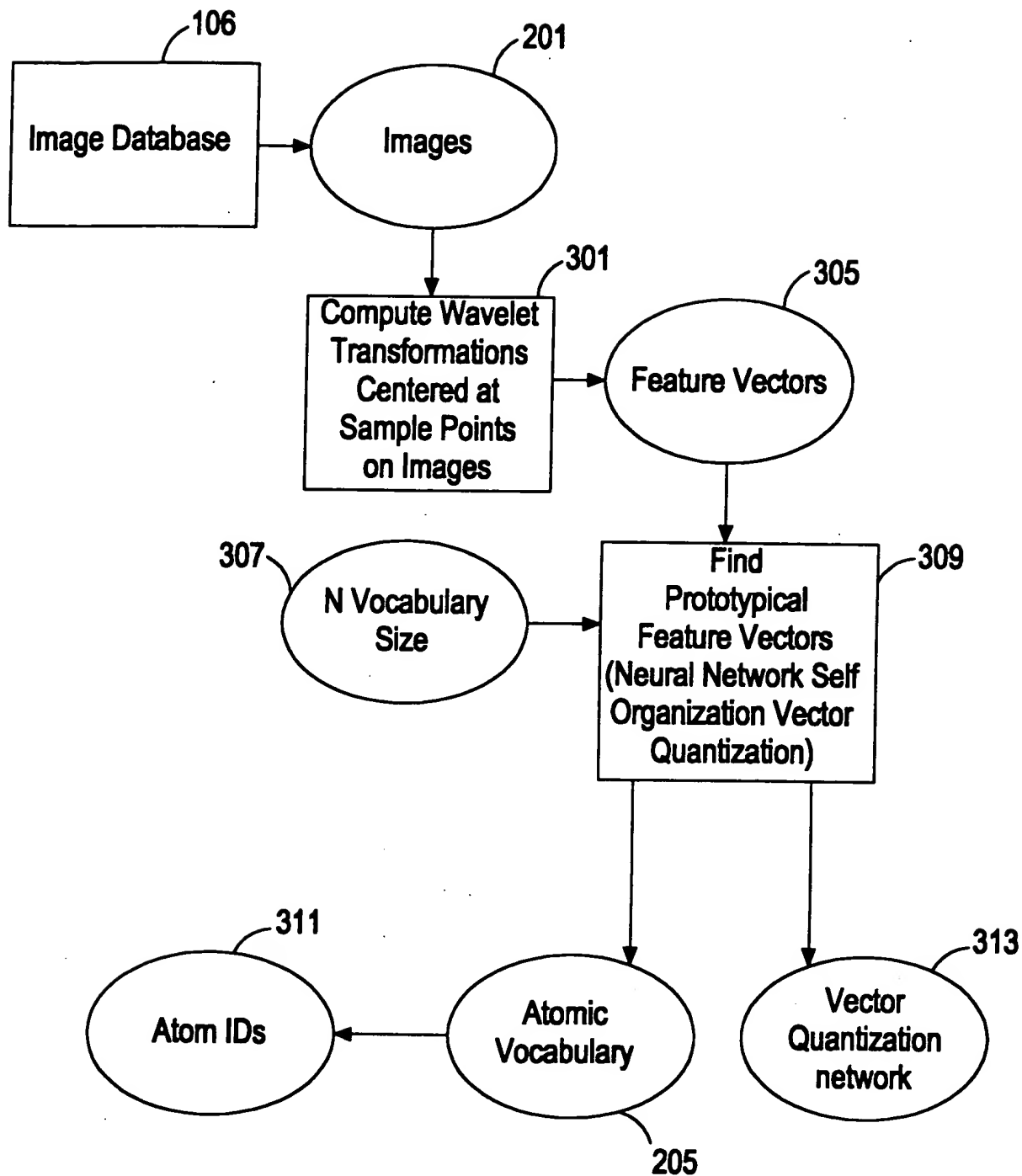


FIG. 31

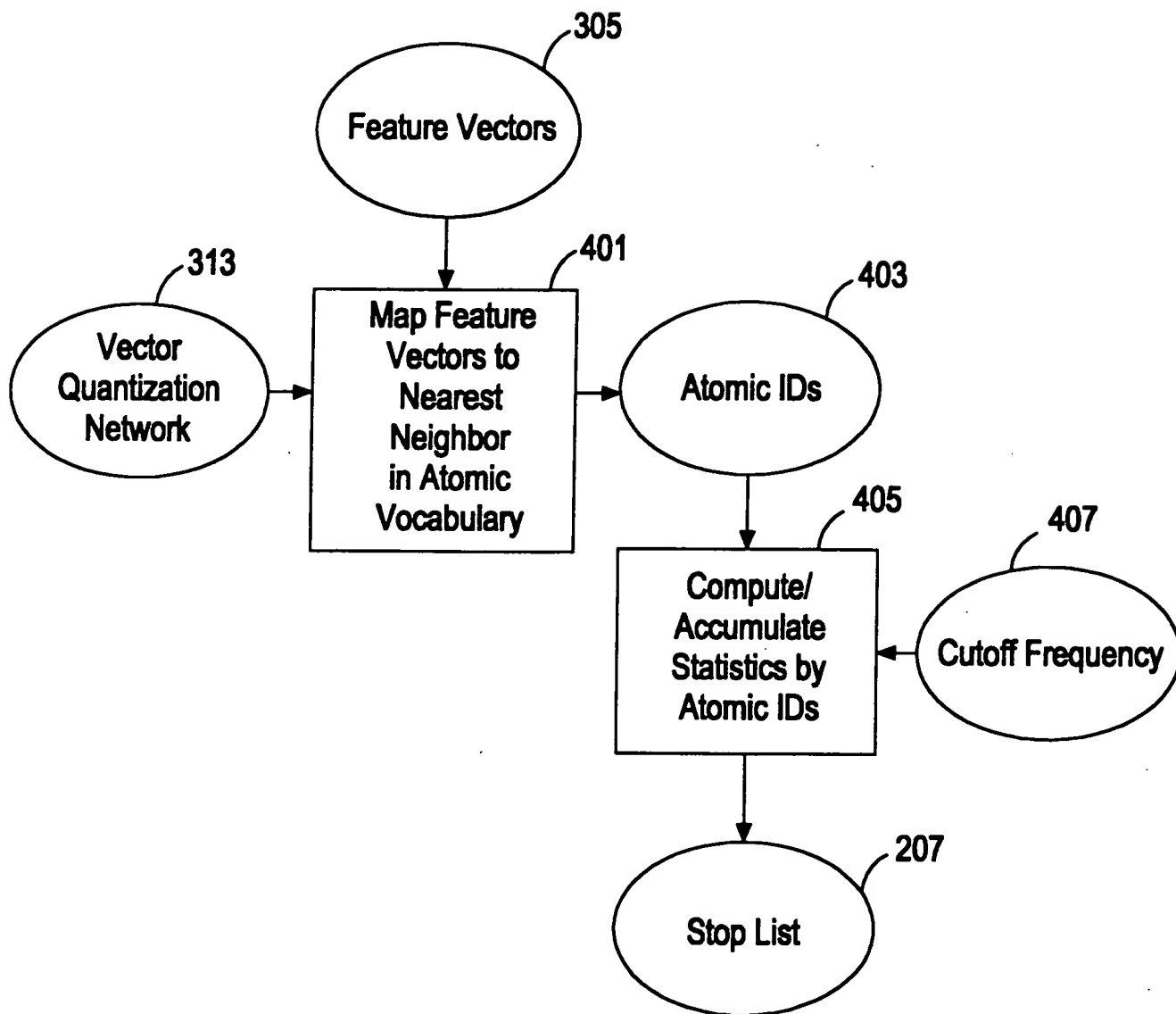


FIG. 32

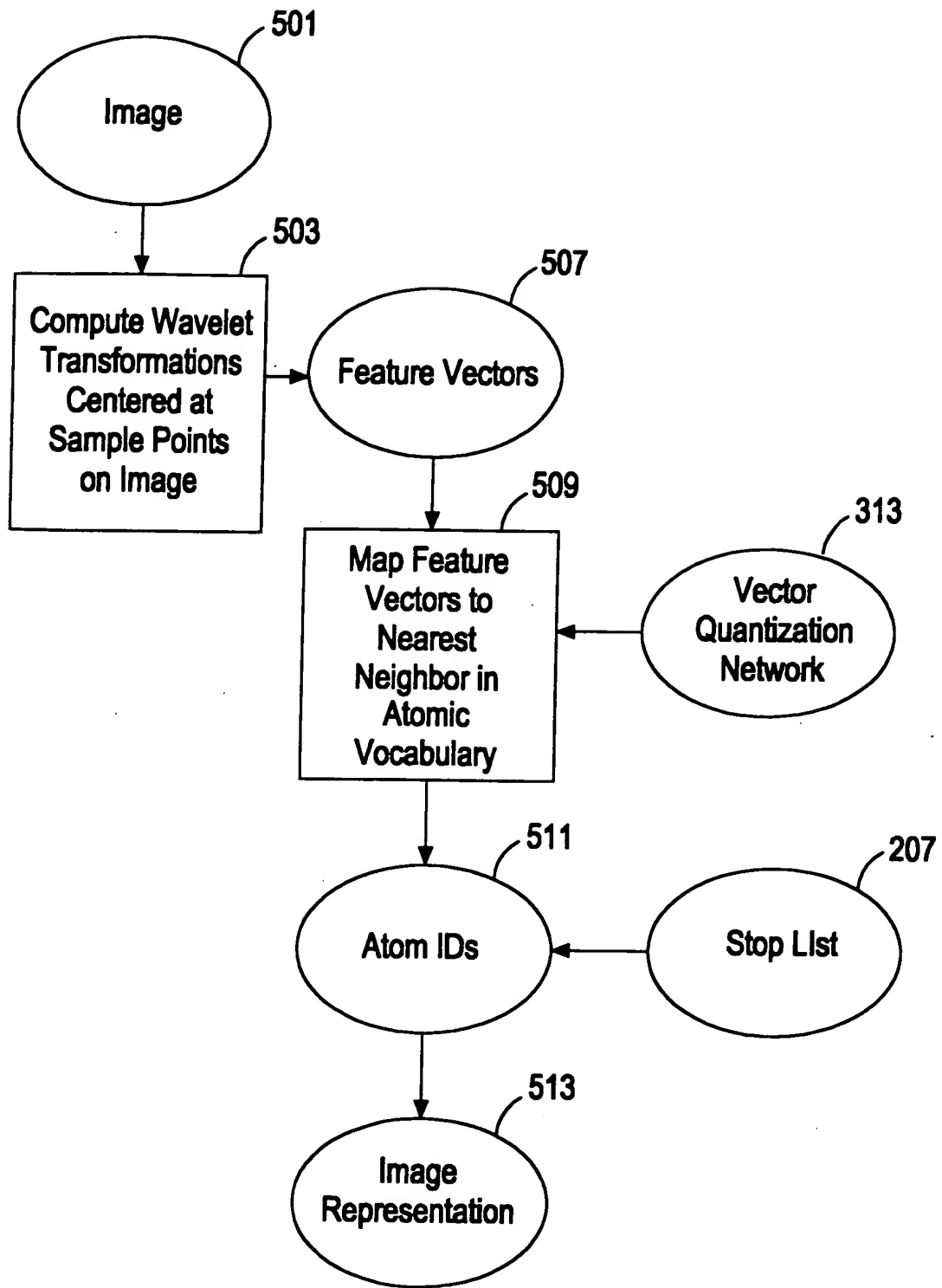


FIG. 33

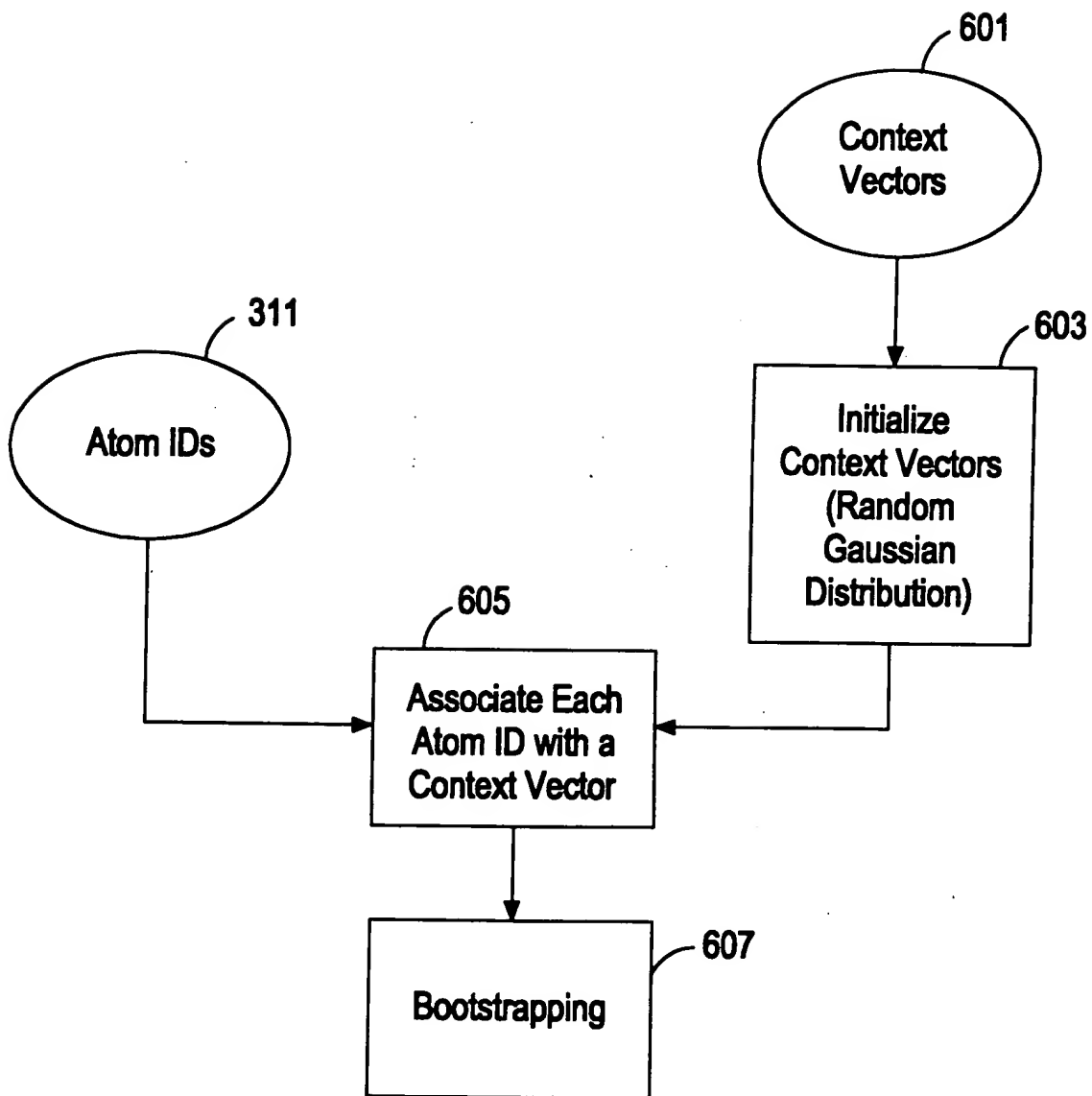


FIG. 34

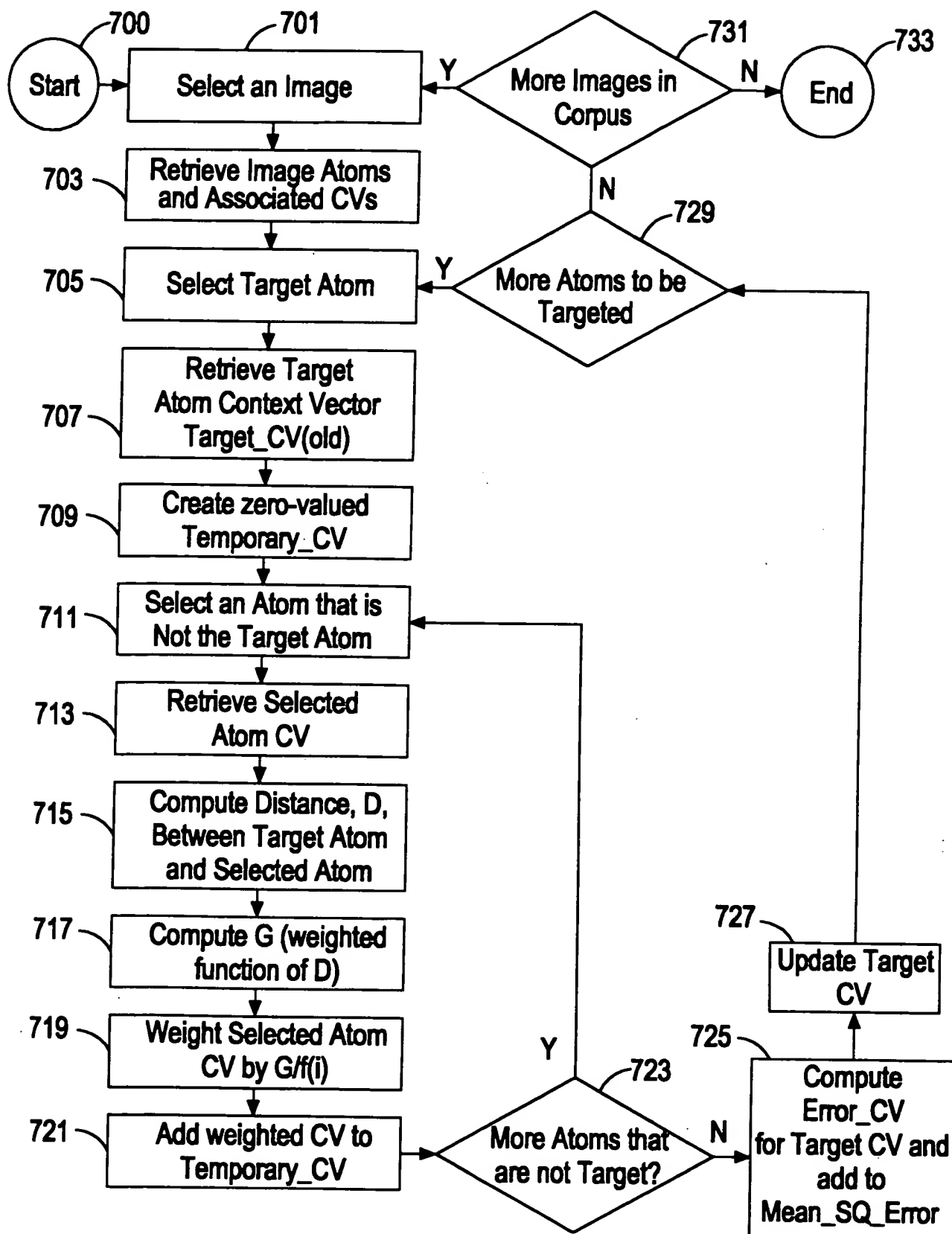


FIG. 35

The diagram shows a grid of points. A central point is labeled "TARGET". Several other points are connected to this central point by lines. One of these lines is labeled D_i , representing the distance from the target to a specific point.

FIG. 36

```

graph TD
    Start((Start)) -- 900 --> ImageAtom([Image Atom(i)])
    ImageAtom -- 901 --> Decision1{Atom(i) on Stop List?}
    StopList((Stop List)) -- 207 --> Decision1
    Decision1 -- Yes 902 --> ImageAtom
    Decision1 -- No 902 --> RetrieveCV[Retrieve Atom(i) CV]
    RetrieveCV --> WeightCV[Weight Atom CV by 1/ln(N)]
    WeightCV --> Accumulate[Accumulate/ Sum Weighted CVs]
    Accumulate --> Decision2{More Atoms for Image?}
    Decision2 -- 909 --> Normalize[Normalize Vector Length]
    Normalize -- 911 --> ImageSummary([Image Summary Vector])
    ImageSummary -- 913 --> Stop((Stop))
    ImageSummary -- 915 --> Stop
    ImageSummary -- 913 --> ImageAtom

```

FIG. 37

```
graph TD; 1001[Parent Node with all Summary Vectors] --> 1003[Clustering Algorithm]; 1003 --> 1005[Child Nodes]; 1005 --> 1007{Further Clustering?}; 1007 -- Yes --> 1003; 1007 -- No --> 1009[Centroid Consistent Clusters];
```

The flowchart illustrates an iterative clustering process. It begins with a box labeled "Parent Node with all Summary Vectors" (1001). An arrow points down to a box labeled "Clustering Algorithm" (1003). From there, an arrow points down to a box labeled "Child Nodes" (1005). Another arrow points down to a diamond-shaped decision box labeled "Further Clustering?" (1007). If the answer is "Yes", an arrow loops back to the "Clustering Algorithm" box (1003). If the answer is "No", an arrow points down to a final box labeled "Centroid Consistent Clusters" (1009).

FIG. 38

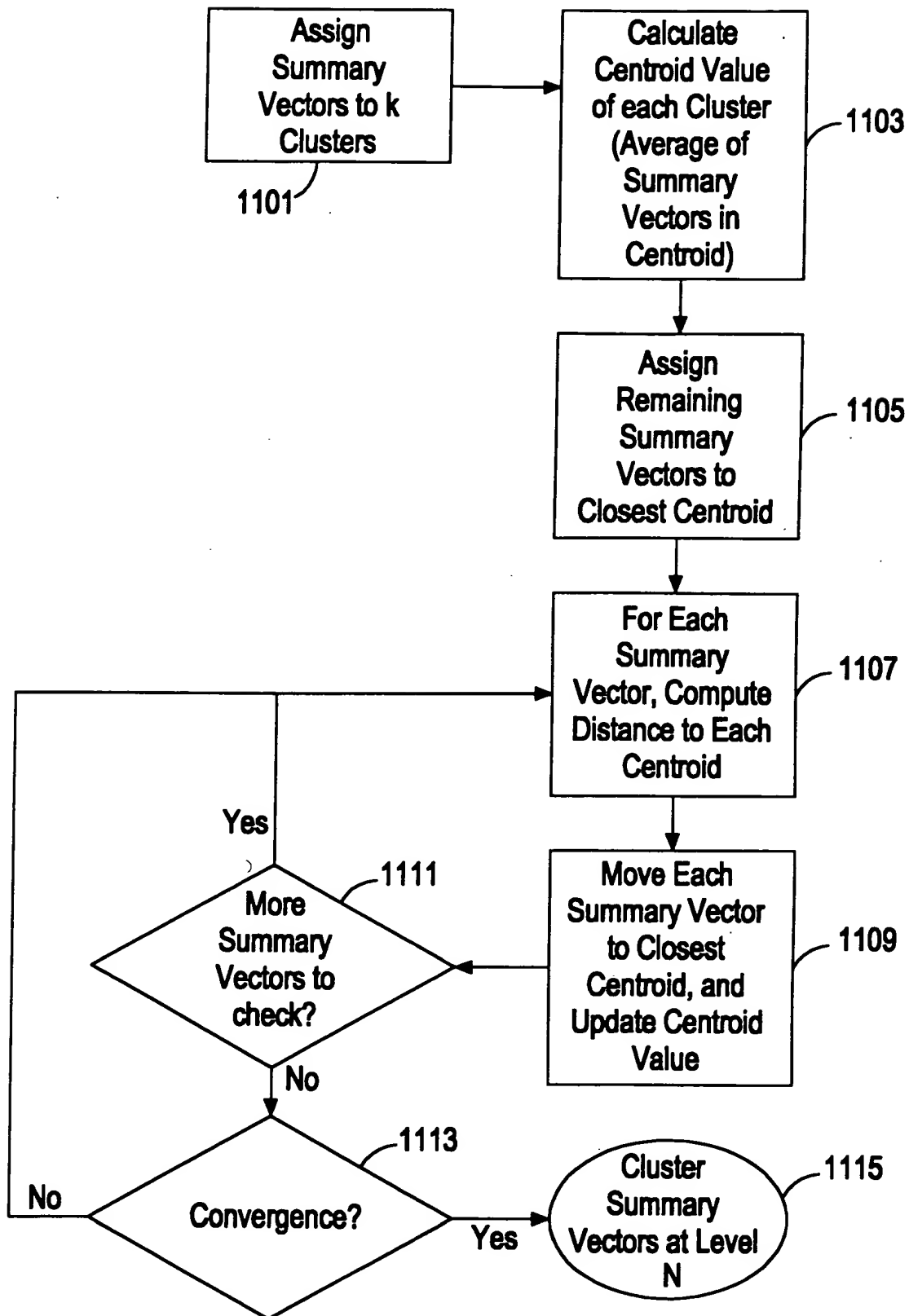
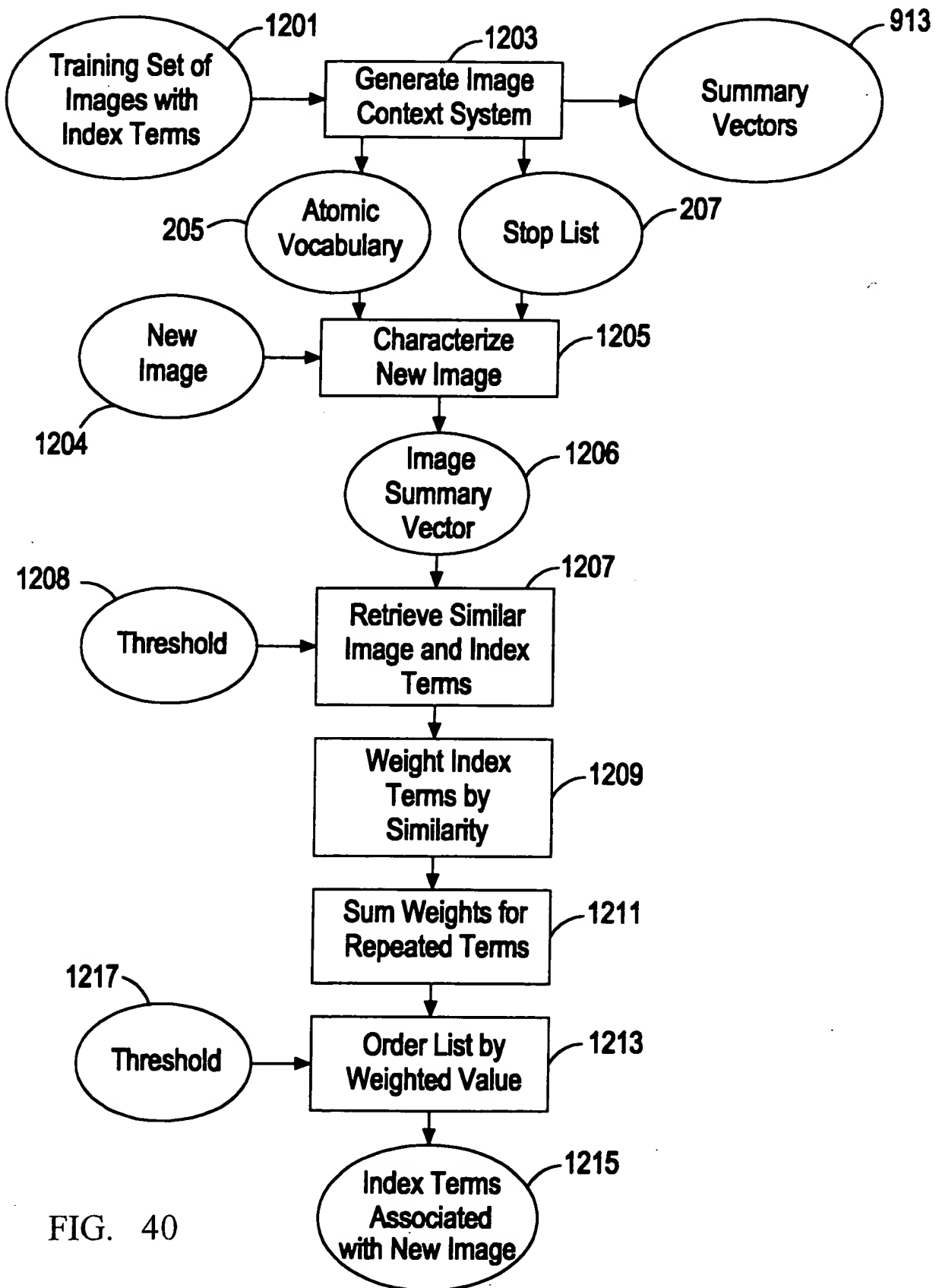


FIG. 39



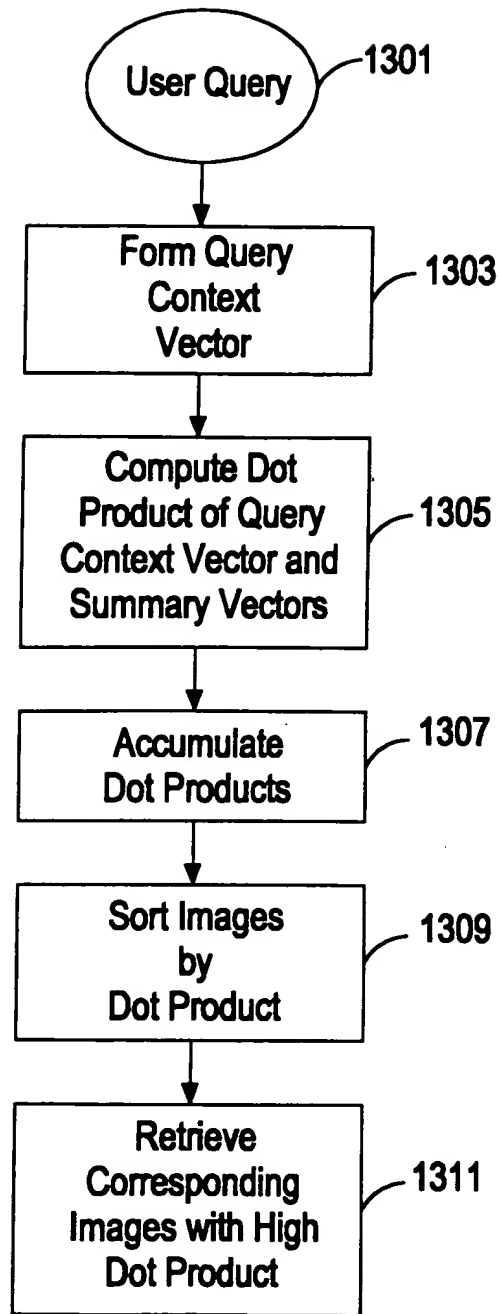


FIG. 41

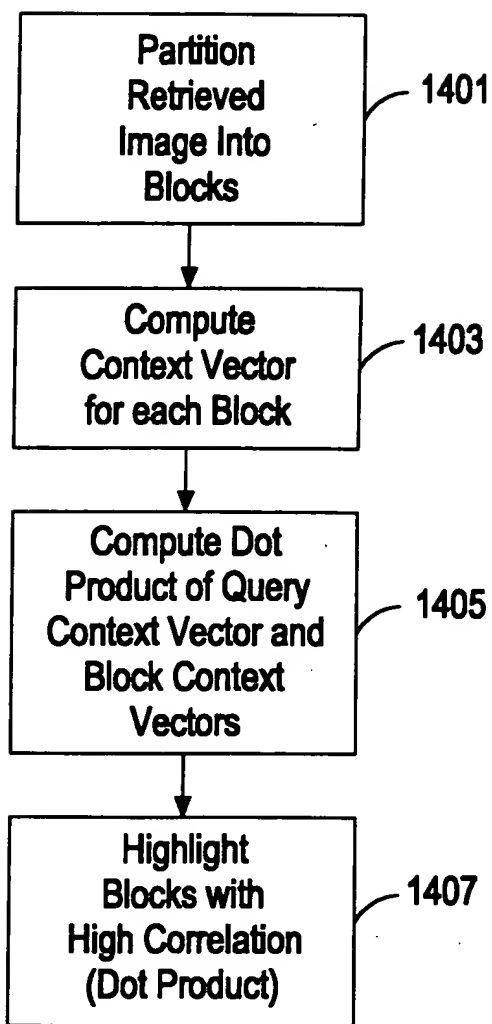


FIG. 42

002260-2222560

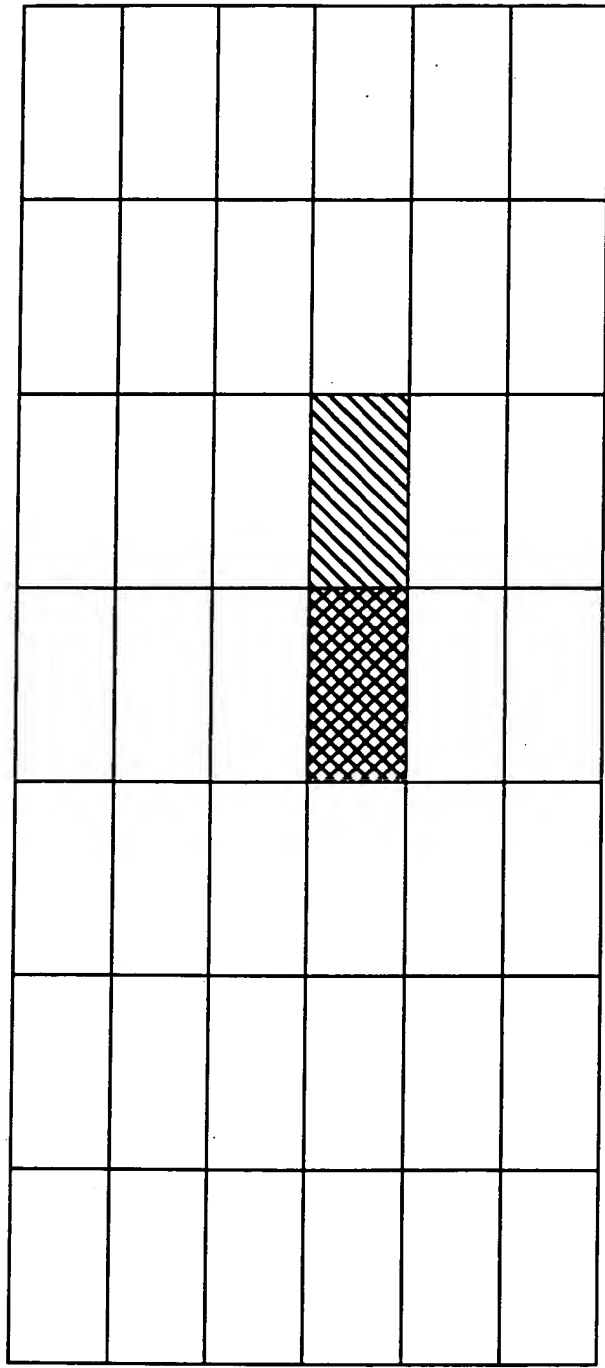


FIG. 43